What is claimed is:

1. A process for producing single walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalyst, the catalyst effective in catalyzing the conversion of a carbon-containing gas into carbon nanotubes;

heating the catalytic particles to a reaction temperature;

catalytically forming single walled carbon nanotubes by exposing the catalytic particles to a carbon-containing gas at a space velocity of 30,000 h^{-1} or greater for a duration of time and at a temperature sufficient to cause catalytic production of the single walled carbon nanotubes thereby forming reacted catalytic particles bearing the single walled carbon nanotubes; and

treating the reacted catalytic particles to obtain the single walled carbon nanotubes.

2. The process of claim 1 wherein the catalyst comprises cobalt and molybdenum.

3. The process of claim 1 wherein the catalytic particles have been pretreated with a reduction process.

4. The process of claim 1 wherein the step of heating the catalytic particles comprises exposing the catalytic particles to a heated inert gas under elevated pressure.

5. The process of claim 1 further comprising the step of flushing the carbon-containing gas from the reacted catalytic particles.

6. The process of claim 1 further comprising the step of cooling the reacted catalytic particles.

7. The process of claim 1 further comprising the step of removing amorphous carbon from the reacted catalytic particles before treating the reacted catalytic particles to obtain the single walled carbon nanotubes.

8. The process of claim 1 wherein the catalyst is a metallic catalyst.

9. The process of claim 1 wherein the reaction temperature is about 700°C to about 1000°C.

10. The process of claim 1 wherein the reaction temperature is about 750°C to about 950°C.

11. A process for producing single walled carbon nanotubes, comprising:

disposing catalytic particles into a reactor wherein the catalytic particles comprise a support material and a catalyst, the catalytic particles effective in catalyzing the conversion of a carbon-containing gas into single walled carbon nanotubes;

removing air from the catalytic particles by exposing the catalytic particles to a heated inert gas under elevated pressure;

reducing the catalytic particles by exposing the catalytic particles to a heated reducing gas under elevated pressure forming reduced catalytic particles;

catalytically forming single walled carbon nanotubes by exposing the reduced catalytic particles to a carbon-containing gas at a space velocity of 30,000 h^{-1} or greater for a duration of time and at a temperature sufficient to cause catalytic production of single walled carbon nanotubes thereby forming reacted catalytic particles bearing the single walled carbon nanotubes; and

treating the reacted catalytic particles to obtain the single walled carbon nanotubes.

12. The process of claim 11 wherein the catalyst comprises cobalt and molybdenum.

13. The method of claim 11 wherein the inert gas comprises a gas selected from the group consisting of He, Ar, and N_2.

14. The method of claim 11 wherein the carbon-containing gas comprises a gas selected from the group consisting of CO, CH_4, C_2H_4, C_2H_2, or mixtures thereof.

15. The method of claim 11 wherein the support material is selected from the group consisting of SiO_2, Al_2O_3, MgO, ZrO_2, zeolites, MCM-41, and Mg(Al)O.

16. The method of claim 11 wherein the catalyst comprises at least one of the metals selected from the group consisting of Co, Mo, Ni, Fe, W, or Nb.

17. The method of claim 11 wherein the catalyst comprises a Group VIII metal selected from the group consisting of Co, Ni, Ru, Rh, Pd, Ir, Fe, Pt, and mixtures thereof, and a Group VIb metal selected from the group consisting of Cr, Mo, W, and mixtures thereof or a Group Vb metal selected from the group consisting of V, Nb and Ta, and mixtures thereof.

18. The process of claim 11 wherein the reaction temperature is about 700°C to about 1000°C.

19. The process of claim 11 wherein the reaction temperature is about 750°C to about 950°C.